

# Kentucky Department of Education - Course Standards

## Course Standards



**Course Code: 902010**

**Course Name: Technology Competency (Computer Lab)**

**Grade Level: 9-12**

**Upon course completion students should be able to:**

### **Big Idea: Information, Communication and Productivity**

Students demonstrate a sound understanding of the nature and operations of technology systems. Students use technology to learn, to communicate, increase productivity and become competent users of technology. Students manage and create effective oral, written and multimedia communication in a variety of forms and contexts.

#### **Academic Expectations**

- 1.11** Students write using appropriate forms, conventions, and styles to communicate ideas and information to different audiences for different purposes.
- 1.16** Students use computers and other kinds of technology to collect, organize, and communicate information and ideas.
- 3.3** Students demonstrate the ability to be adaptable and flexible through appropriate tasks or projects.
- 6.1** Students connect knowledge and experiences from different subject areas.
- 6.3** Students expand their understanding of existing knowledge by making connections with new knowledge, skills, and experiences.

#### **High Enduring Knowledge – Understandings**

*Students will understand that*

- proficient use of emerging technology is needed for competitive entry into the workforce.
- technology allows the exchange of information and ideas to enable participation in the global society.
- collaborative online projects impact life-long learning and global interactions.
- productivity tools are used effectively and efficiently to enhance lifelong learning.

#### **High Concepts and Skills - Information *Students will***

- apply, consolidate and extend the skills, knowledge and experiences acquired earlier to exhibit competence in the use of technology
- use appropriate technology terminology
- apply basic care and maintenance when using technology
- explore and analyze the impact of current and emerging technology

#### **High Concepts and Skills – Communication *Students will***

- use technology to communicate in a variety of modes (e.g., audio, speech to text, print, media)
- participate in electronic communities (e.g., virtual learning) as learners, initiators, contributors and mentors
- use online collaboration and interactive projects (e.g., email, videoconferencing) to communicate with others (e.g., experts, mentors)
- select and use appropriate technology to collect, analyze present information

#### **High Concepts and Skills – Productivity *Students will***

- use and apply a repertoire of technology skills regularly in the preparation of content assignments and authentic projects

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- use a variety of formats (web publishing, oral presentations, journals and multimedia presentations) to summarize and communicate the results

create professional electronic products (e.g., resumes, letters of applications, portfolios) for employment and post-secondary education

## Big Idea: Safety and Ethical/Social Issues

Students understand safe and ethical/social issues related to technology. Students practice and engage in safe, responsible and ethical use of technology. Students develop positive attitudes toward technology use that supports lifelong learning, collaboration, personal pursuits and productivity.

### Academic Expectations

- 2.17** Students interact effectively and work cooperatively with the many ethnic and cultural groups of our nation and world.
- 3.6** Students demonstrate the ability to make decisions based on ethical values.
- 4.3** Students individually demonstrate consistent, responsive, and caring behavior.
- 4.4** Students demonstrate the ability to accept the rights and responsibilities for self and others.
- 4.5** Students demonstrate an understanding of, appreciation for, and sensitivity to a multi-cultural and world view.

### High Enduring Knowledge – Understandings *Students will understand that*

- interactive technology projects and online courses enhance learning to ensure global awareness.
- acceptable social technology practices is essential to post-secondary career choices.
- ethical use of technology is necessary to ensure safety, privacy and legal issues.
- new technology development and deployment creates social, cultural, political and economic issues that requires citizens to make informed decisions.
- positive attitudes and practices towards technology support lifelong learning.
- assistive technology supports learning to ensure equitable access to a productive life.

### High Concepts and Skills – Safety

#### *Students will*

- explain the importance of safe Internet use (e.g., iSafe skills)
- apply safe behavior when using technology

### High Concepts and Skills – Ethical Issues

#### *Students will*

- describe intellectual property issues related to technology
- practice responsible, ethical and safe behavior (e.g., security, privacy, passwords, personal information virus protection and iSafe skills) while using technology and adhering to the Acceptable Use Policy (AUP) as well as other state and federal laws
- investigate basic issues related to responsible use of technology and describe personal consequences of inappropriate use
- use legal and ethical practices when completing digital projects/schoolwork and credit all participants for their contribution to the work
- investigate software piracy, its impact on the technology industry and possible repercussions to individuals and/or the school district

### High Concepts and Skills – Social Issues *Students will*

- forecast the impact of technological products and systems in a global society
- use appropriate etiquette when interacting with global environments (e.g., video conferencing, IM)

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- analyze economic, political and cultural issues influenced by the development and use of technology
- investigate how technology supports their interests and career opportunities
- engage with technology to support lifelong learning (e.g., online courses, online assessments, interactive video conferencing)
  - describe/ explain how assistive technology supports learning to ensure equitable access to a productive life explain how emerging technology is exponential and shapes economic factors and cultural influences

## Big Idea: Research, Inquiry/Problem-Solving and Innovation

Students understand the role of technology in research and experimentation. Students engage technology in developing solutions for solving problems in the real world. Students will use technology for original creation and innovation.

### Academic Expectations

- 1.1** Students use reference tools such as dictionaries, almanacs, encyclopedias, and computer reference programs and research tools such as interviews and surveys to find the information they need to meet specific demands, explore interests, or solve specific problems.
- 2.3** Students identify and analyze systems and the ways their components work together or affect each other.
- 5.1** Students use critical thinking skills such as analyzing, prioritizing, categorizing, evaluating, and comparing to solve a variety of problems in real-life situations.
- 5.2** Students use creative thinking skills to develop or invent novel, constructive ideas or products.
- 5.4** Students use a decision-making process to make informed decisions among options.
- 5.5** Students use problem-solving processes to develop solutions to relatively complex problems.
- 6.1** Students connect knowledge and experiences from different subject areas.

### High Enduring Knowledge – Understandings *Students will understand that*

- technology supports critical thinking skills used in inquiry/problem solving to make informed decisions for independent learning.
- technology can assist in researching, analyzing and evaluating information obtained from a variety of sources to answer an essential question across all content areas.
- technology supports research and development to solve problems and produce results in authentic situations.
- ideas, solutions and designs (e.g., intellectual property) created through technology are used in a knowledge-based economy.

### High Skills and Concepts – Research

*Students will*

- apply a research process model (e.g., Big6, Research Cycle) to conduct online research
- select and evaluate appropriateness of information (authenticity) from a variety of resources, including online research databases, online catalogs/virtual library and web sites to answer the essential questions
- evaluate the accuracy and appropriateness of electronic information and correctly note the appropriate citations (e.g., APA, MLA)
- organize information that is collected using a variety of tools (e.g., spreadsheet, database, saved files)
- manipulate data using charting tools and graphic organizers (e.g., concept mapping, flow charting and outlining software) to connect ideas and organize information
- express and synthesize digital information collected in research effectively and accurately to produce original work (e.g., desktop-published or word-processed report, multimedia presentation, engineering design)

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## High Skills and Concepts – Inquiry/Problem-solving

*Students will*

- select and apply technology in content learning to solve authentic problems and make informed decisions
- apply teamwork and critical thinking strategies to solve technology problems
- explain how technology can be used for problem solving and creativity (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software)
- analyze and troubleshoot software and hardware problems
- investigate and apply expert systems and simulations in real-world situations
- identify open-ended, unresolved problems and select and use appropriate technology to develop solutions
- explore how inquiry/problem-solving impact science, technology, engineering and mathematics (STEM) (e.g., design, programming, robotics)

## High Skills and Concepts – Innovation

*Students will*

- use technology to express creativity in all content areas
- design, develop, publish and present original innovative products (e.g., Web pages, video, robotics, online content)
- produce an innovative product or system using an engineering design process
- collaborate with peers, experts and others to develop solutions and innovative products (e.g., design/CAD, troubleshooting, helpdesk, models, systems)
- recognize that innovative ideas, products and skills lead to intellectual property and copyrights  
describe how technological innovation leads to entrepreneurial opportunities